

250/NF/03

U 015125-9

## Claims:

1. A bidirectional promoter comprising:
  - a) a Transcription Activation Module comprising of a chemically synthesised and strategically designed artificial nucleotide sequence having the sequence shown in SEQ ID NO. 1 or upto 70% homologous to it, and designed to enhance the level of expression of genes in plants;
  - c) a Transcription Initiation Module comprising of a chemically synthesised and strategically designed artificial nucleotide sequence shown in SEQ ID NO. 2 or upto 70% homologous to it, and designed to function as a minimal sequence to initiate transcription of a gene placed downstream;
2. A bidirectional promoter as claimed in claim 1 wherein said Transcription Initiation Module is located on either or both sides of the 'Transcription Activation Module' to express one or two genes, one at a time or both simultaneously for developing genetically engineered plants.
3. A bidirectional promoter as claimed in claim 1 wherein the Transcription Initiation Module is placed along 5' to 3' direction on either or both sides of Transcription Activation Module.
4. A bidirectional promoter as claimed in claim 2 wherein the Transcription Initiation Module is placed along 5' to 3' direction on either or both sides of Transcription Activation Module.
5. A bidirectional promoter as claimed in claim 2 wherein one or more genes of interest are placed downstream of the Transcription Activation Module for the purpose of their expression from one or both sides of the Transcription Activation Module.
6. A bidirectional promoter as claimed in claim 1 wherein said Transcription Activation Module comprises a DNA sequence having SEQ ID NO. 1 of signature sequences statistically identified as commonly present in highly expressed plant genes within -100 - to -500 nucleotide positions upstream of the transcription initiation site in plants.
7. A bidirectional promoter as claimed in claim 1 wherein Transcription Initiation Module comprises a DNA sequence having SEQ ID NO. 2 of signature

250/NF/03

8. Sequences statistically identified as present within -100 nucleotides upstream of the transcription initiation site in natural promoters in plants.

5 9. Transgenic plants developed after stable transformation with the bidirectional promoter claimed in claim 1 for the purpose of improving plant characteristics of interest to agriculture or industry.

10 10. A plant transformation vector comprising a bidirectional promoter as claimed in claim 1 expressing a selection marker such as *nptII*, *bar*, *hpt* etc. or any other such gene from one direction and a reporter gene such as *gusA*, *gfp*, *luc* or any other gene whose product can be conveniently monitored and the use of such vectors for development of transgenic plants.

15 10. A bidirectional promoter comprising:

c) a Transcription Activation Module comprising of a chemically synthesised and strategically designed artificial nucleotide sequence having the sequence shown in SEQ ID NO. 1 or upto 70% homologous to it, and designed to enhance the level of expression of genes in plants;

d) a Transcription Initiation Module comprising of a chemically synthesised and strategically designed artificial nucleotide sequence shown in SEQ ID NO. 2 or up to 70% homologous to it, and designed to function as a minimal sequence to initiate transcription of a gene placed downstream;

c) said Transcription Initiation Module being located on either or both sides of the 'Transcription Activation Module' to express one or two genes, one at a time or both simultaneously for developing genetically engineered plants.

25

30